



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,560	06/30/2003	Hong Wang	3691-570	7266
23117	7590	02/15/2006	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			STEIN, STEPHEN J	
			ART UNIT	PAPER NUMBER
			1775	
DATE MAILED: 02/15/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,560	WANG ET AL.	
	Examiner	Art Unit	
	Stephen J. Stein	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-10,12-17 and 19-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 21 is/are allowed.
- 6) ☒ Claim(s) 1-6,8,9,12-17,19,20 and 22-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

2. Claims 22, 32 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 22 recites the limitation “ wherein the IR reflecting layer comprises one or more of NiCr, Nb and NbCr”. This makes the claims indefinite, since it is improper Markush language. See MPEP 2173.05(h).

4. Claim 32 recites the limitation “wherein the IR reflecting layer comprises at least one of NiCr, Ni, Nb, Cr, NbCr, Ag and Au, and/or nitrides thereof”. This makes the claims indefinite, since it is improper Markush language. See MPEP 2173.05(h).

5. Claim 33 recites the limitation “ comprises at least one of Cr₂O₃, Nb₂O₅, Hf₂O₃, Ta₂O₅, and/or a combination of one or more of these materials”. This makes the claims indefinite, since it is improper Markush language. See MPEP 2173.05(h).

Claim Rejections - 35 USC § 102

6. Claims 1-4, 6, 8, 9, 12-15, 17, 19, 20, 23 25-29 and 31-33 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,132,881 (Hartig ‘881).

Regarding claims 1-4, 6, 12-15, 17, 19, 20, 23, 25-29 and 31-33, Hartig discloses a glass substrate, an undercoat layer, a ZnO nucleating layer over the undercoat layer, a layer of metallic

Art Unit: 1775

silver (IR reflecting layer) over the nucleating and undercoat layers, a protective layer over the silver layer, an upper intermediate layer of Cr or Ta oxide or nitride (contact layer) over the protective layer, and a final overcoat layer of Si_3N_4 over and touching the upper intermediate layer (Cr or Ta oxide or nitride) (See col. 12, lines 8-64). The examiner interprets the single silver layer to be equivalent to two IR reflecting silver layers next to each other under the overcoat and also interprets the single Cr oxide layer to be equivalent to two Cr oxide layers next to each other. Hartig '881 further teaches that the thickness of the SiN overcoat layer (overcoat outer layer) is 350 to 700 angstroms and the upper intermediate layer (under layer) has a thickness of no more than 15 angstroms (col. 7 and 8). Consequently, the thickness of the upper intermediate layer (outer overcoat layer) is more than 3 times as thick as the upper intermediate layer (under layer).

Regarding claims 8 and 9, the reference further claims an embodiment without the protective layer over the silver layer (thus in this claimed embodiment the Cr oxide layer (contact layer) is contacting the silver IR layer). See claim 11.

Claim Rejections - 35 USC § 103

7. Claims 5, 16 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartig '881 in view of US 6,159,607 (Hartig '607).

As stated above, Hartig '881 teaches all the limitations of claim 1, and further teaches that the coated article has a visible transmittance of 84-90% (col. 4, lines 14-31). Hartig '881 is silent on the SiN overcoat layer further including aluminum.

Art Unit: 1775

Hartig '607 teaches a similar IR reflecting coated glass article and further teaches that the SiN overcoat layer was prepared using a target comprising 95% Si and 5% Al (e.g. the SiN layer will have some aluminum present).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the Hartig '881 SiN overcoat layer have aluminum present in the layer since the '607 teaches that Al is typically used in forming such layers for similar structured articles.

Allowable Subject Matter

8. Claims 10 and 21 are allowed over the prior art of record.
9. Claim 22 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 10 and 21, the prior art fails to teach or suggest the limitation that the "IR reflecting layer is sandwiched between and contacting each of a layer of comprising an oxide of nickel and/or an oxide of chrome and a layer comprising zinc oxide". In Hartig, while the silver IR reflecting layer is sandwiched between a chromium oxide layer and a zinc oxide nucleating layer, there is intervening protective layer over the silver IR layer, thus the IR layer does not contact the layer of the chromium oxide.

Regarding claim 22, the prior art fails to teach or suggest the limitation "wherein the IR reflecting layer comprises one or more of NiCr, Nb and NbCr" in combination with the limitation "wherein the IR reflecting layer located between the underlayer of the overcoat and another layer comprising silicon nitride, in combination with the limitation In Hartig, the IR reflecting layer is silver and does not teach or suggest NiCr, Nb or NbCr. While in the prior art,

certain IR layers of NiCr are known, there is no teaching or suggestion in the prior art taken as whole, to have this claimed combination.

Response to Arguments

11. Regarding the rejections made under 35 USC 112 1st paragraph, the rejections have been withdrawn in view of applicants' arguments.

Regarding the rejections made under 35 USC 102(e) over the Stachowiak reference, the rejections have been withdrawn in view of applicants' arguments.

Regarding the rejections made under 35 USC 102 and 103 over the Hartig reference, applicants argue that Hartig described an upper intermediate layer and an overcoating layer of silicon nitride, but that in Hartig the upper intermediate layer is the contact layer that contacts the IR reflecting layer, while applicants' claims require a contact layer between the overcoat and the IR reflecting layer. Applicants further argue that the Claim 1 as amended now requires a contact layer comprising an oxide of Ni/and or and oxide of Cr between the IR reflecting layer and the under layer and that the Hartig reference fails to disclose this contact layer.

This argument has been carefully considered, but not deemed persuasive. First the contact layer which is claimed in independent claims 1, 8 and 26 is claimed/disclosed as being an oxide of nickel and/or chrome. Thus a chromic oxide layer meets this limitation for the composition of the claimed contact layer and therefore applicants' claims read on a two layers of chromic oxide (the contact layer and the underlayer of the overcoat). Further, since the claims read on two layers of the same composition next to each other, a single layer of chromic oxide between the IR layer and the outer silicon nitride layer will read on that claimed recitation. Because Hartig recites discloses 1) a metallic silver (IR reflecting layer), 2) an upper intermediate layer of Cr or

Art Unit: 1775

Ta oxide or nitride (contact layer) over the silver IR layer and , and 3) a final overcoat layer of Si_3N_4 , (See for instance claim 11), the reference reads on this claimed recitation.

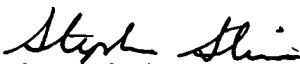
Further, upon an additional review and reevaluation of the Hartig reference, the reference has now been applied against claims 12-17, 19, 20 and 23.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Stein whose telephone number is 571-272-1544. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:00 p.m. If the attempts to reach the examiner are unsuccessful, the examiner's supervisor, Deborah Jones can be reached by dialing 571-272-1535. The official fax number is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 10, 2006


Stephen J. Stein
Primary Examiner
Art Unit 1775